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13 UNITED STATES DISTRICT COURT

14 NORTHERN DISTRICT OF CALIFORNIA

15 SAN FRANCISCO DIVISION

16 HUAWEI TECHNOLOGIES, CO., LTD., et al.,

17 Plaintiffs,

18 v.

19 SAMSUNG ELECTRONICS CO., LTD., et al.,

20 Defendants.

21 SAMSUNG ELECTRONICS CO., LTD. &
22 SAMSUNG ELECTRONICS AMERICA, INC.

23 Counterclaim-Plaintiffs,

24 v.

25 HUAWEI TECHNOLOGIES, CO., LTD,
26 HUAWEI DEVICE USA, INC., HUAWEI
TECHNOLOGIES USA, INC., & HISILICON
TECHNOLOGIES CO., LTD.

27 Counterclaim-Defendants.
28

CASE NO. 3:16-cv-02787-WHO

**REPLY BRIEF IN SUPPORT OF
SAMSUNG'S PARTIAL MOTION
TO DISMISS UNDER RULE 12(B)(6)**

Date: October 26, 2016

Time: 2:00 p.m.

Courtroom: 2

Judge: Hon. William H. Orrick

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1 **I. INTRODUCTION**

2 Huawei's Opposition Brief confirms that the claims of the '892 and '239 Patents are
 3 directed to abstract mathematical formulas at *Alice* step 1 and contain no "inventive concept" apart
 4 from those formulas at *Alice* step 2. For example, when summarizing the '892 claims in its
 5 Introduction, Huawei states that these claims recite steps "to create a low correlation, low
 6 interference RAP." Dkt. 86 ("Opp.") at 2:21. And Huawei agrees that creating RAPs is the focus
 7 of the claims, as well as the only aspect of the claims that is alleged to be "inventive." *Id.* at 2:26.
 8 But there is no dispute that RAPs are just patterns of numbers, and the steps to create the claimed
 9 RAPs reflect a pure mathematical formula. Thus, the '892 claims are directed to an abstract idea
 10 — a mathematical formula — at *Alice* step 1. Furthermore, Huawei does not even try to identify
 11 any "inventive concept" besides the mathematical formula itself at *Alice* step 2.

12 Huawei's Opposition Brief also confirms the ineligibility of the '239 claims. When
 13 summarizing the '239 claims in its Introduction, Huawei states that these claims recite steps to
 14 create "sequences" that are not closely correlated with each other. *Id.* at 2:22-23. Here too,
 15 Huawei agrees that creating such sequences is the focus of the claims, as well as the only aspect of
 16 the claims that is alleged to be "inventive." *Id.* at 2:26. But there is also no dispute that sequences
 17 are just patterns of numbers, and the steps to create the claimed sequences reflect a pure
 18 mathematical formula. Thus, like the '892 claims, the '239 claims are directed to an abstract idea
 19 — a mathematical formula — at *Alice* step 1. Furthermore, as with the '892 claims, Huawei does
 20 not even try to identify any "inventive concept" in the '239 claims besides the mathematical
 21 formula itself at *Alice* step 2.

22 Unable to rebut Samsung's ineligibility showing based on the '892 and '239 claims
 23 themselves and the applicable law, Huawei seeks to uphold these claims by raising several straw-
 24 man arguments. For example, Huawei repeatedly contends that the mathematical formulas in the
 25 claims have technological utility because they reduce cellular interference. But the fact that a
 26 mathematical formula has technological utility does not mean that such a formula is patent-
 27 eligible. *Parker v. Flook*, 437 U.S. 584, 595 (1978) ("if a claim is directed essentially to a method
 28 of calculating, using a mathematical formula, even if the solution is for a specific purpose, the

1 claimed method is nonstatutory.”). Huawei also says that Samsung is trying to create a rule that
 2 any claim *involving* math is ineligible. Opp. at 3:8-9; 13:15-16. Not so. Samsung does not argue
 3 that any claim *involving* math is ineligible. The ’892 and ’239 claims are invalid under Section
 4 101 because they are *directed to* math and contain no inventive concept apart from the claimed
 5 mathematical formulas.

6 Huawei further criticizes Samsung for not discussing “preemption.” *Id.* at 11:1. But the
 7 Federal Circuit has made clear that the two-step *Alice* framework *itself* addresses preemption
 8 concerns; no separate preemption analysis is required or even proper. *Ariosa Diagnostics, Inc. v.*
 9 *Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) (“Where a patent’s claims are deemed only
 10 to disclose patent ineligible subject matter under the *Mayo* framework,¹ as they are in this case,
 11 preemption concerns are fully addressed and made moot.”). In any event, Huawei does not even
 12 try to argue that the claimed mathematical formulas — whether used to create the claimed RAPs
 13 of the ’892 claims or the sequences in the ’239 claims — have any utility *except* to be used for
 14 cellular transmissions. Thus, the ’892 and ’239 claims *do* effectively preempt all uses of their
 15 claimed mathematical formulas.

16 Finally, Huawei relies heavily on the Federal Circuit’s recent *McRO* and *Enfish* decisions,
 17 which held that certain software routines were patent-eligible. But the claims in *McRO* and *Enfish*
 18 were not directed to math — indeed, they did not even *contain* math. In fact, both cases re-
 19 iterated that mathematical formulas are *not* patent-eligible. *McRO, Inc. v. Bandai Namco Games*
 20 *Am. Inc.*, -- F.3d --, 2016 WL 4896481, at *6 (Fed. Cir. Sept. 13, 2016) (“Mathematical formulas
 21 are a type of abstract idea.”); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1338 (Fed. Cir.
 22 2016) (distinguishing patent-eligible software processes from “the patent-ineligible claims at issue
 23 in other cases [which] recited use of an abstract mathematical formula on any general purpose
 24 computer or recited a purely conventional computer implementation of a mathematical formula”).

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 26
 27 ¹ The “*Mayo* framework” is another name for the *Alice* framework. *Content Extraction &*
 28 *Transmission LLC v. Wells Fargo Bank, Nat. Ass’n*, 776 F.3d 1343, 1346 (Fed. Cir. 2014) (“The
 Supreme Court’s two-step framework, described in *Mayo* and *Alice*, guides our analysis.”).

1 In sum, Huawei has failed to rebut the ineligibility of the '892 and '239 Patents under
2 Section 101. Thus, Samsung respectfully requests that these patents be dismissed from this case.²

3 **II. THE '892 CLAIMS ARE INELIGIBLE UNDER SECTION 101**

4 **A. Alice Step 1: The '892 Claims Are Directed To An Abstract Mathematical Formula**

5 As explained in Samsung's Motion, the '892 claims are directed to a mathematical formula
6 to create RAPs, which are themselves sets of numbers. Dkt. 39 ("Mot.") at 7-10. Huawei's
7 Opposition fails to rebut this point.

8 **1. The '892 Claims Are Directed To An Abstract Mathematical Formula For Creating RAPs**

9 Samsung demonstrated that the '892 claims are directed to a mathematical formula for
10 generating a certain set of RAPs. Mot. at 7:5-9:5. Rather than rebut this, Huawei's arguments
11 further show how the claims are "directed to" this mathematical formula.

12 For example, Huawei does not dispute Samsung's explanation that the only alleged
13 "improvement" in the claims over the conventional art is the use of particular cyclic shift numbers
14 to create a set of RAPs — which are indisputably just sets of numbers. Mot. at 7:12-19. In fact,
15 Huawei embraces this fact. Opp. at 7:1-4 ("As taught and claimed by the '892 patent, the inventor
16 identified and selected particular cyclic shifts that would provide the greatest number of RAPs
17 from a root sequence for a given cell size, thereby minimizing the number of root sequences
18 needed to generate the 64 RAPs."). *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 611-12
19 (Fed. Cir. 2016) (using "TLI's characterization of the claimed invention . . . [i]n its briefs" to
20 "support[] our conclusion at step one" about what the claims are "directed to"). Thus, there is no
21 dispute that the cornerstone of the invention is pure math. As Samsung explained in its Motion,
22 this means that the claims are "directed to" an abstract mathematical formula at *Alice* step 1, as a
23 matter of law. Mot. at 7:19-22 (citing *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1375-
24 76 (Fed. Cir. 2016)); *see also Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1348
25

26
27 ² Huawei does not dispute that there are no claim construction issues or other issues that
28 make eligibility under Section 101 unripe for decision.

1 (Fed. Cir. 2015) (finding that claims were directed to “maintaining the state” during web
 2 navigation because “the end result of ‘maintaining the state’ is described as the innovation over
 3 the prior art, and the essential, ‘most important aspect’”).

4 Huawei argues that the ’892 claims are not directed to an abstract idea because “[t]he ’892
 5 patent claims are specifically directed to a *specific technological improvement* with the
 6 technological goal of facilitating communication between a user equipment and cell of a mobile
 7 communication network.” Opp. at 13:12-15 (emphasis added). This just begs the question as to
 8 what the alleged “improvement” is. Here, as noted above and as Huawei admits, it is just math.
 9 But as the Supreme Court has long noted, just because a mathematical formula can be used for
 10 technological ends, that does not make such a formula patentable. *See Flook*, 437 U.S. at 590
 11 (“[T]he Pythagorean theorem would not have been patentable, or partially patentable, because a
 12 patent application contained a final step indicating that the formula, when solved, could be
 13 usefully applied to existing surveying techniques”). Rather, as *Flook* noted, “if a claim is directed
 14 essentially to a method of calculating, using a mathematical formula, even if the solution is for a
 15 specific purpose, the claimed method is nonstatutory.” *Id.* at 595 (citation omitted).

16 Huawei also fails to distinguish the numerous cases in which claims directed to
 17 mathematical formulas were deemed ineligible under Section 101. While Huawei argues that the
 18 claims in Samsung’s cited cases either claimed natural life-science concepts or “claimed abstract
 19 ideas untethered to applications of physical devices” (Opp. at 15:8-10), all of Samsung’s cited
 20 cases involved technological applications and/or physical devices. For example, the *Flook* claims
 21 were tied and limited to “a process comprising the catalytic chemical conversion of
 22 hydrocarbons.” *Flook*, 437 U.S. at 586. The claims from *In re TLI* recited such physical devices
 23 as a “telephone unit” and “server,” as well as “digital images.” *In re TLI*, 823 F.3d at 610. The
 24 claims in *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.* recited a “*device dependent*
 25 transformation of color information content of an image.” 758 F.3d 1344, 1351 (Fed. Cir. 2014)
 26 (emphasis added). The claims from *Synopsys, Inc. v. Mentor Graphics Corp.* were directed to
 27 “determining the hardware components and layout of an IC [integrated circuit].” 78 F. Supp. 3d
 28 958, 963 (N.D. Cal. 2015). And the claims from *Compression Tech. Sols. LLC v. EMC Corp.*

1 related “to the parsing of information streams into groups or packets of information so as to
 2 improve the performance of various information processing applications such as data compression
 3 and file-contents verification.” No. C-12-01746 RMW, 2013 WL 2368039, at *1 (N.D. Cal. May
 4 29, 2013). The lesson of these cases is that mathematical formulas and other abstract ideas are not
 5 patent-eligible just because they are used for technological ends, or just because they are paired
 6 with conventional and generic devices. The same is true for the ’892 claims here, defeating
 7 Huawei’s argument as a matter of law.

8 Huawei also does not dispute that the generic post-solution steps of selecting and
 9 transmitting an RAP, as recited in the claims, were thoroughly conventional in the art. Indeed,
 10 this is how RAPs have always been used. Mot. at 2:3-11, 8:17-19. This confirms that the ’892
 11 claims are simply “directed to” a mathematical formula for creating an allegedly-*better* RAP. Cf.
 12 *Flook*, 437 U.S. at 594-95 (“The chemical processes involved in catalytic conversion of
 13 hydrocarbons are well known, as are the practice of monitoring the chemical process variables, the
 14 use of alarm limits to trigger alarms, the notion that alarm limit values must be recomputed and
 15 readjusted, and the use of computers for ‘automatic monitoring-alarming.’ *Respondent’s*
 16 *application simply provides a new and presumably better method for calculating alarm limit*
 17 *values.*”) (emphasis added).

18 **2. Huawei’s Cited Caselaw Does Not Support The Eligibility Of The ’892** 19 **Claims**

20 Huawei cites *McRO, Inc. v. Bandai Namco Games Am. Inc.*, arguing that *McRO* upheld
 21 claims that employed a mathematical formula. But the claims in *McRO* claimed a set of software
 22 “rules” for improving computer animation. *McRO*, 2016 WL 4896481 at *3. *McRO* did not
 23 involve a mathematical equation or formula at all. Thus, Huawei is incorrect when, in reference
 24 to *McRO*, Huawei states: “Recently, the Federal Circuit has also found that claims that ‘employed
 25 a well-known mathematical equation’ but ‘used that equation in a process designed to solve a
 26 technological problem in a conventional industry practice’ were patentable ‘because they
 27
 28

1 improved an existing technological process.”³ *McRO*, slip op. at 20-21 (citing *Alice*, 134 S. Ct. at
 2 2358 and *Diehr*, 450 U.S. at 177, 178, 187).” Opp. at 9:21-10:2. The claims in *Enfish* (also cited
 3 by Huawei) claimed a “self-referential table or computer database” programmed in software.
 4 *Enfish*, 822 F.3d at 1336. Again, no math. In fact, as noted above, *McRO* and *Enfish* explicitly
 5 *distinguished* their patent-eligible software routines from patent-ineligible mathematical formulas.
 6 *McRO*, 2016 WL 4896481 at *6; *Enfish*, 822 F.3d at 1338.

7 Huawei also cites this Court’s opinion in *France Telecom*, but the claims in *France*
 8 *Telecom* claimed “a method for error-correction coding [and decoding] of source data elements.”
 9 *France Telecom S.A. v. Marvell Semiconductor Inc.*, 39 F. Supp. 3d 1080, 1083-84, 1092 (N.D.
 10 Cal. 2014).⁴ No mathematical formulas were recited in any of the claims there either. Huawei’s
 11 final principal case — *CalTech v. Hughes* — is also facially inapposite here, since *CalTech* held
 12 that the asserted claims were *not* eligible at step 1. *California Inst. of Tech. v. Hughes Commc’ns*
 13 *Inc.*, 59 F. Supp. 3d 974, 993 (C.D. Cal. 2014) (“At step one, the Court finds that all the claims at
 14 issue are directed to abstract ideas.”). Indeed, *CalTech* noted that “the Supreme Court has been
 15 more skeptical of bare attempts to patent mathematical formulas, as opposed to algorithms
 16 generally. An algorithm is not necessarily expressed as a mathematical formula. Rather, an
 17 algorithm is a series of steps for accomplishing a goal.” *Id.* at 991; *accord Boar’s Head Corp. v.*
 18 *DirectApps, Inc.*, No. 2:14-CV-01927-KJM, 2015 WL 4530596, at *4 (E.D. Cal. July 28, 2015)
 19 (noting that “computer software and codes remain patentable [] in limited contexts; [but] attempts
 20 to patent mathematical formulas are met with skepticism”).

21 Nor does the Supreme Court’s *Diehr* decision support the eligibility of the ’892 claims,
 22 contrary to Huawei’s arguments. Opp. at 3:10-12, 11:11-13, 16:17-18. In *Alice* parlance, the
 23 mathematical equation in the *Diehr* claims was not what the claims would have been “directed to”
 24 under *Alice* step 1. After all, the *Diehr* equation was “well-known” and “has long been used to

25 _____
 26 ³ The *McRO* passage that Huawei cites involved *McRO* merely recounting *Diehr*, the 1981
 27 case in which the Supreme Court found that claims that “employed a well-known mathematical
 28 equation” were patent-eligible. *McRO*, 2016 WL 4896481 at *6.

⁴ The cited *France Telecom* decision also issued before *Alice*.

1 calculate the cure time in rubber-molding presses.” *Diamond v. Diehr*, 450 U.S. 175, 187, 177 n.2
 2 (1981). Thus, it was not the alleged advance or focus of the claims. By contrast, the (allegedly-
 3 new) mathematical formula in the ’892 claims *is* the claimed advance — everything else in the
 4 claims is wholly conventional, and the new formula is what the claims are “directed to.”

5 **B. Alice Step 2: The ’892 Claims Do Not Contain Any Inventive Concept**

6 As explained in Samsung’s Motion, the ’892 claims further lack an “inventive concept”
 7 under *Alice* step 2. The generic elements of “selecting,” “transmitting,” and “receiving” an RAP
 8 are wholly conventional, and the mathematical details in the dependent claims merely embellish
 9 the abstract mathematical formula itself. Mot. at 9:7-10:14. Huawei does not dispute this point.
 10 Instead, at *Alice* step 2, Huawei points to the same mathematical formula used to create RAPs that
 11 it contends is a “technological advancement” at *Alice* step 1. Opp. at 16:13-14 (“the inventive
 12 concept of the claims applies mathematical principles to solve a specific problem in a limited
 13 context”); *id.* at 16:10-12 (relying on the “reduced set of cyclic shift increments that reflect the
 14 properties of the RAPs employed in the claimed process: 0, 13, 15, 18, 22, 26, 32, 38, 46, 59, 76,
 15 93, 119, 167, 279, and 419”). But for a claim that is directed to an abstract mathematical formula
 16 at *Alice* step 1, an “inventive concept” under *Alice* step 2 must be something *other than* the
 17 mathematical formula itself. *Alice* itself made this clear. *Alice Corp. Pty. v. CLS Bank Int’l*, 134
 18 S. Ct. 2347, 2355 (2014) (“First, we determine whether the claims at issue are directed to one of
 19 those patent-ineligible concepts. If so, we then ask, ‘[w]hat *else* is there in the claims before
 20 us?’”) (emphasis added, internal citation omitted); *see also Flook*, 437 U.S. at 594 (a mathematical
 21 formula “cannot support a patent unless there is some *other* inventive concept in its application”)
 22 (emphasis added).⁵ Indeed, if the mathematical formula that a claim was directed to at *Alice* step 1

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 25 ⁵ While Huawei faults Samsung for citing the *Diehr* dissent for this proposition (Opp. at
 26 12:9-10)), the passage Samsung cited merely recounted *Flook*. Mot. at 10:7-11 (quoting *Diehr*,
 27 450 U.S. at 204 (Stevens, J., dissenting) (citing *Flook*, 437 U.S. at 591-95)). Huawei also argues
 28 in a footnote that it is “illogical” to require an inventive concept at *Alice* step 2 that is different
 from the abstract idea itself. Opp. at 12 n.6. But this requirement is not at all illogical. Rather, it
 serves to ensure that a patent claim contains “significantly more” than the abstract idea itself.
Alice, 134 S. Ct. at 2355.

1 could serve an inventive concept at *Alice* step 2, then a mathematical formula would be patent-
2 eligible. But that, of course, is not the law.

3 Huawei's citation to *McRO* for its *Alice* step 2 argument (Opp. at 16:16-20) is inapposite.
4 First, as discussed above, *McRO* did not involve a mathematical formula at all. Second, the
5 patentability of the *McRO* claims was resolved at *Alice* step 1, such that *McRO* did not even apply
6 *Alice* step 2. Thus, Huawei's reliance on *McRO* at *Alice* step 2 makes little sense.

7 Huawei next argues that "Samsung effectively concedes that the '892 claims are specific
8 and narrow" Opp. at 16:19-20. But Huawei cites no authority stating that a "narrow"
9 mathematical formula is somehow more patentable than a broad mathematical formula, or any
10 more capable of serving as an "inventive concept" under *Alice* step 2.

11 Huawei further asserts that "[a]s evident from the claim language, the '892 patent claims
12 do not require mere application of some cyclic shift using conventional computer components."
13 Opp. at 17:1-2. But Huawei cites no claim language to support this conclusory statement. Nor
14 could it. The few computer components recited in the '892 claims are all entirely "conventional"
15 and generic. *See, e.g.*, claims 1-9 (reciting only "User Equipment"); claims 10-18 (reciting only
16 "non-transitory computer readable storage medium"); claim 19 (reciting only "an apparatus of the
17 mobile communication system"); claim 20 (reciting only "a processor" and "a non-transitory
18 computer readable storage medium."). Indeed, Huawei does not even try to explain how any of
19 these components — alone or in combination — are inventive.

20 Moreover, Huawei argues that all of Samsung's cited cases at *Alice* step 2 "simply add[]
21 conventional computer components to well-known business practices" (Opp. at 17:10-11) and that
22 none of Samsung's cases "involved a patent on a technological improvement" *Id.* at 17:14-
23 15 (citation omitted). This allegation is wholly inaccurate. For example, Samsung cited one
24 Federal Circuit case whose claims covered an abstract idea for allegedly improving data
25 transmission in telecommunications networks, just like the '892 claims. *Cyberfone Sys., LLC v.*
26 *CNN Interactive Grp., Inc.*, 558 F. App'x 988, 990 (Fed. Cir. 2014) (invalidating claim that
27 covered "obtaining data transaction information entered on a telephone from a single transmission
28 from said telephone" by "forming a plurality of different exploded data transactions for the single

transmission” and routing them to different destinations). Samsung also cited another case that allegedly improved email delivery. *Perfect Web Techs., Inc. v. Infousa, Inc.*, No. 07-80286-CIV, 2008 WL 6153736, at *1 (S.D. Fla. Oct. 27, 2008).

Finally, Huawei does not contend that RAPs have any alleged purpose except to be transmitted in cellular communications. ’892 Patent at 1:25-28; Opp. at 1:19-20 (“RAPs contain sequences that are used to initiate a connection and synchronize the mobile device with the base station.”). Thus, when the ’892 claims recite generating an RAP through a mathematical formula and then transmitting that RAP using wholly generic cellular elements, the ’892 claims are essentially claiming the mathematical formula itself along with a generic instruction to “apply it.” This is precisely what is *not* allowed at *Alice* step 2. *Alice*, 134 S. Ct. at 2358 (“Stating an abstract idea while adding the words ‘apply it’ is not enough for patent eligibility. Nor is limiting the use of an abstract idea to a particular technological environment.”) (internal quotation marks omitted). Put differently, the ’892 claims effectively preempt the RAP-creation formula itself, given that the formula has no other alleged uses. This is forbidden under Section 101. *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972) (“It is conceded that one may not patent an idea. But in practical effect that would be the result if the formula for converting BCD numerals to pure binary numerals were patented in this case. The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.”).

III. THE ’239 CLAIMS ARE INELIGIBLE UNDER SECTION 101

A. *Alice* Step 1: The ’239 Claims Are Directed To An Abstract Mathematical Formula

Huawei argues that the ’239 claims “disclos[e] a new way to generate ZC [Zadoff-Chu] sequences to lower correlation between sequence groups.” Opp. at 18:4-5. Thus, Huawei admits that the focus and improvement of the ’239 claims is the creation of “sequences” — number patterns — that are not highly correlated with each other. Huawei does not dispute that this is a pure mathematical operation. Thus, the ’239 claims are directed to an abstract idea — a

1 mathematical formula — under *Alice* step 1. *Digitech*, 758 F.3d at 1350 (“The method in the ’415
 2 patent claims an abstract idea because it describes a process of *organizing information through*
 3 *mathematical correlations* and is not tied to a specific structure or machine.”) (emphasis added).

4 Huawei also repeats its straw-man argument that the mere presence of a mathematical
 5 formula in a claim will not render the claim abstract, or that the claim language *only* claims math.
 6 Opp. at 18:21-22, 19:12-13. But again, Samsung has never alleged that the mere *presence* of a
 7 mathematical formula in the ’239 claims makes them directed to an abstract idea, or that the claim
 8 language *only* claims math. Rather, the ’239 claims are directed to an abstract idea because the
 9 formula for creating non-correlated sequences is the focus of the claims and the alleged
 10 advancement over the prior art. Mot. at 3:22-4:20, 11:1-6. Huawei does not actually dispute this.
 11 See Opp. at 19:6-7 (“the challenged claims are *directed to the selection and generation of*
 12 *sequences* to improve wireless communications.”) (emphasis added). Thus, Huawei’s argument
 13 that Samsung is somehow “pars[ing] out” individual claim elements in demonstrating the ’892
 14 patent claims are direct to an abstract idea (Opp. at 19:18-20) is plainly incorrect.

15 As with the ’892 claims, Huawei’s allegation that this mathematical formula for generating
 16 sequences has utility to improve wireless communications does not render the formula patent-
 17 eligible. Again, legions of mathematical formulas have utility in the technological arts, but a
 18 claim directed to such formulas still is not patent-eligible. *Flook*, 437 U.S. at 595 (“if a claim is
 19 directed essentially to a method of calculating, using a mathematical formula, even if the solution
 20 is for a specific purpose, the claimed method is nonstatutory.”); *see also Digitech*, 758 F.3d at
 21 1351; *Synopsys*, 78 F. Supp. 3d at 962; *Compression Tech.*, 2013 WL 2368039 at *1 (cited in
 22 Section II(A)(1), *supra*).

23 As with the ’892 claims, Huawei’s reliance on *McRO*, *Enfish*, and *France Telecom* for the
 24 ’239 claims (Opp. at 19:15-17) is inapposite, for the same reasons discussed above. See Section
 25 II(A)(2), *supra*. Huawei again ignores how the claims in *McRO* and *France Telecom* involved
 26 non-mathematical software routines, not mathematical formulas. See *id.* And while Huawei cites
 27 to language in *Enfish* regarding using computers as a “tool” or “adding to well-known business
 28

practices” (Opp. at 19:8-11), those points have no relevance here given that, as noted above and as Huawei admits, the ’239 claims are directed to math.

Moreover, as with the ’892 claims, Huawei’s attempt to analogize the ’239 claims to *Diehr* at *Alice* step 1 (Opp. at 19:3-5) is unavailing. As explained in Section II(A)(2), *supra*, the *Diehr* claims would not have been deemed “directed to” a mathematical formula at *Alice* step 1, given that the formula recited in the *Diehr* claims was conventional and had long been used in the rubber-curing art. By contrast, the sequence-generation formula in the ’239 claims *is* what those claims are “directed to” at *Alice* step 1, as it is the cornerstone of the claims and the only alleged advance of the claims over the art. Huawei’s argument that the *Diehr* formula and the ’239 formula both “identif[y] the meaning of the constituent input variables” (Opp. at 19 n.14) is thus beside the point. Even leaving aside the fact that *any* intelligible formula will identify meaning of its variables, the key distinction between the *Diehr* claims and the ’239 claims is that the claimed formula is the focus and alleged advance of the ’239 claims, but was not the focus and alleged advance of the *Diehr* claims.

Finally, to the extent a separate pre-emption analysis is necessary or appropriate, Huawei does not allege that the sequences of the ’239 claims — or the claimed formula used to generate them — have any utility except to be used in cellular communications. Opp. at 1:6-8 (“In modern cellular networks, a mobile device begins the process to connect to the network by transmitting certain radio signals to a base station. *These radio signals are based on certain sequences – a special set of elements.*”) (emphasis added). Thus, here too, the ’239 claims effectively preempt the formula itself, which is forbidden under Section 101. *Alice*, 134 S. Ct. at 2358; *Benson*, 409 U.S. at 71-72.

B. Alice Step 2: The ’239 Claims Do Not Contain Any Inventive Concept

As with the ’892 claims, Huawei relies on the mathematical formula itself from the ’239 claims to supply an “inventive concept” under *Alice* step 2. Opp. at 20:11-15 (alleging “the inventive requirement of ‘wherein n is a natural number, i is a serial number of the sub-group, k is a serial number of the sequence group, a value of a basic sequence index r_i in the sub-group i in sequence k is at least one of $[kN_1/N_1]$, $[kN_1/N_1]$, $[kN_1/N_1] + 1$ and $[kN_1/N_1] - 1$, wherein

1 N_i is a length of a sequence in the candidate sequence collection, N_i is a length of a reference
 2 sub-group sequence.”). As explained above, this makes no sense: if an allegedly-new
 3 mathematical formula could supply an inventive concept under *Alice* step 2, then one would be
 4 able to patent such formulas. But mathematical formulas are *not* patent-eligible, no matter how
 5 new they might be.⁶

6 Huawei also argues that “the claims of the ’239 Patent, which include the [mathematical
 7 formula], are limited to the situation where some mobile devices are interacting with one cell of a
 8 cellular network and other mobile devices are interacting with another cell.” Opp. at 20:10-17.
 9 But this scenario — different mobile devices communicating with different cells — is ubiquitous
 10 in modern cellular networks. Huawei states as much in the first substantive paragraph of its
 11 Opposition Brief. Opp. at 1:6-11 (“In modern cellular networks . . . [t]here can be thousands of
 12 mobile devices within a cell at any one time and multiple cells in close proximity to each other.”).
 13 Thus, Huawei’s allegation that the ’239 claims are “limited” to this ubiquitous situation shows no
 14 limitation at all, and certainly does not supply an inventive concept.

15 Finally, Huawei argues that the ’239 claims would not “prevent other ways to allocate
 16 sequences or use sub-groups, candidate sequences, and sequence indices.” Opp. at 20:17-19. This
 17 is an artful way of saying that the mathematical formula in the ’239 claims requires generating and
 18 allocating sequences a certain way, and thus other formulas are still available. But as discussed
 19 with respect to the ’892 claims, this argument misses the point. The fact that a mathematical
 20 formula may be specific (and thus “narrow”) does not render it patent-eligible. Likewise, the fact
 21 that a given formula leaves *other* formulas available also does not render that formula patent-
 22 eligible. So Huawei cannot defend the eligibility of the ’239 claims by arguing that they do not
 23 preempt *other* mathematical formulas.

24
 25
 26 ⁶ Huawei states that “Samsung concedes” the mathematical limitations “may ‘supply an
 27 inventive concept.’” Opp. at 20:4-7. That is untrue. Samsung merely said, as Huawei does not
 28 dispute, that everything else *but* the mathematics in the claims is “utterly generic and high-level,
 and thus cannot supply an inventive concept.” Mot. at 12:12-15. Samsung never said that the
 abstract mathematical concepts could supply an inventive concept.

1 **IV. CONCLUSION**

2 For the foregoing reasons, Samsung respectfully requests that its Motion be granted and
3 the '892 and '239 Patents be dismissed from this case.

4
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Respectfully submitted,

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